

## **Examples of PhET Simulations aligned with Middle and High School Science Content**

(All available from <http://phet.colorado.edu>)

### **Motion, Forces, Work, and Energy**

Buoyancy (gravity, force balance)  
Collision Lab (Conservation of momentum)  
Energy Skate Park (Conservation of Energy:  
Potential and Kinetic)  
Gravity Force Lab (gravity)  
Forces and Motion (forces,  $F=ma$ )  
Friction (thermal energy)  
Lady Bug Revolution (rotational motion,  
angular momentum)  
Lunar Lander (gravity, mass)  
Masses and Springs (gravity, oscillations, net  
force)  
Maze Game (position, velocity, acceleration)  
Moving Man (speed, velocity, acceleration)  
My Solar System (gravity)  
Pendulum Lab (conservation of energy)  
Projectile Motion (air resistance, gravity)  
Ramp: Forces and Motion (forces, energy,  
work)

### **Circuits, Electricity, and Magnetism**

Balloons and Static Electricity (electrical  
charge, electricity)  
Circuit Construction (circuits, resistors)  
Electric Field Hockey (charges, electrostatic  
forces)  
Faraday's Electromagnetic Lab (magnets,  
electricity, induction)  
John Travoltage (static electricity)  
Magnets and Compass (magnetism)  
Ohm's Law (circuits)  
Signal Circuit (circuits)

### **Waves: Sound, Light, Water**

Blackbody Spectrum (light/radiation)  
Radio Waves & Electromagnetic Fields  
Sound  
Wave Interference (water, sound, light)  
Wave on a String

### **Chemistry**

Acid-Base Solutions (concentration, strength)  
Alpha Decay / Beta Decay (nuclear decay)  
Balloons and Buoyancy (density)  
Build an Atom (atomic structure, periodic table)  
Conductivity (properties of matter)  
Density  
Friction (molecular motion)  
Gas Properties (pressure, volume, temperature)  
Greenhouse Effect (molecular absorption)  
Lasers, Neon Lights (atomic structure, energy  
levels)  
Microwaves (absorption)  
Models of the Hydrogen Atom (atomic  
structure, energy levels)  
Molecules and Light (*coming soon*)  
Nuclear Fission (conservation of mass, isotopes)  
pH Scale (acids and bases)  
Reaction and Rates (chemical reactions)  
Reactants, Products, and Leftovers (reaction  
equations, limiting reactants)  
Rutherford Scattering (models, atomic structure)  
Salts and Solubility (physical properties,  
compounds)  
States of Matter (temperature, phase changes)

### **Earth Science**

Glaciers (water cycle, weather)  
Gravity and Orbits (*coming soon*)  
Greenhouse Effect (weather)  
My Solar System (planets, orbits, gravity)  
Radioactive Dating Game (half life)

### **Biology**

Eating and Exercise (nutrition, human body)  
Color Vision (light, vision)  
Gene Machine: The Lac Operon (DNA to  
protein, regulation)  
Neuron (cell membrane potential)